Claims

1. A vessel for transporting wind turbines, wherein the vessel has a loading space for receiving at least one wind turbine mounted on a base, said wind turbine being in an upright position corresponding to an upright operating position of the wind turbine when placed on said loading space, said vessel having means for displacing the wind turbine from the loading space to an unloading position, and said vessel having winches with at least three flexible lines with associated fastening means for mounting on at least three lifting points on the wind turbine base, the flexible lines being arranged at the unloading position so that their sections extending down to mounting places on the wind turbine base are spaced apart in the horizontal direction.

2. A vessel according to claim 1, wherein said wind turbine base has a width, and said vessel has at the unloading position two projecting arms arranged at a mutual horizontal distance larger than the width of the wind turbine base, and that at least two of the flexible lines extend from the arms to the lifting points on the wind turbine base.

3. A vessel according to claim 2, wherein each arm is associated with at least two flexible lines extending from the arm down to the lifting points on the wind turbine base.

4. A vessel according to claim 3, wherein said two flexible lines extend down to the lifting points with a mutual distance in a longitudinal direction of the arm substantially corresponding to the length of the wind turbine base.

5. A vessel according to claim 1, wherein the means for displacing the wind turbine comprise rails extending along a full length of the loading space of the vessel to the unloading position.

6. A vessel according to claims 1, wherein at least one of the winches with flexible lines used at the unloading position is part of the means for dis-

placement of the wind turbine from the loading space to the unloading position.

7. A vessel according to claim 1, wherein the vessel, in a condition of heavy draught, has a deck of the loading space located at such depth below the water surface that a wind turbine can float over the loading space and, in a transport condition with lighter draught, has the deck of the loading space located above the water surface, whereby the wind turbine is carried by the vessel.

8. A vessel according to claim 1, wherein the vessel has ballast means for changing a ballast condition of a wind turbine base.

9. A vessel according to claim 8, wherein the ballast means comprise a pump system for liquid with a plurality of hoses for connection on the wind turbine base.

10. A vessel according to claim 9, wherein a hose automat with the hoses is displaceable in a longitudinal direction of the vessel.

11. A vessel according to claim 8, wherein the turbine base has a number of ballast tanks, and the ballast means have a number of hose sets corresponding to the number of ballast tanks in the turbine base.

12. A vessel according to claim 11, wherein the ballast means have at least four hose sets.

13. A vessel according to claim 11, c h a r a c t e r i z e d in that each hose set comprises a filling hose that can be connected to a liquid source and can preferably also be switched to an air source, and an emptying hose that can be supplied with pressurized liquid.

14. A vessel according to claim 13, wherein each hose set has a sounding hose connected to a pneumatic pressure gauge.

15. A vessel according to claim 8, wherein control of liquid and/or air supply to the hoses is remotely controlled from a control station having at least one

control member, such as least one control member for each hose set, for adjustment of ballast changes in the wind turbine base.

16. A vessel according to claim 1, wherein each of the flexible lines extends over an associated pulley suspended in a sensor for determination of the axial load in the line.

17. A vessel according to claim 16, wherein the axial loads measured in the lines are included as parameters in a control of the ballast means.

18. A vessel according to claim 1, wherein the flexible lines are controlled to have axial loads of the lines of substantially the same magnitude.

19. A method of moving a wind turbine, wherein the wind turbine has a wind turbine base with tower, nacelle and rotor blades, wherein at least one wind turbine is positioned on a vessel and is supplied with ballast in the wind turbine base before being sailed out to the wind farm, and wherein in connection with transfer of the wind turbine from the vessel to a place of installation on the wind farm, ballast is supplied to the wind turbine base while the wind turbine base is held suspended in at least three horizontally distanced flexible lines from the vessel with at least most of the upper surface of the wind turbine base located above the sea surface.

20. A method according to claim 19, wherein the at least one wind turbine is in an upright position corresponding to the upright operating position of the wind turbine during sailing out to the place of installation on the offshore wind farm.

21. A method according to claim 19, wherein the wind turbine is self-floating and is moved in a floating, upright position to a position above a loading space on the vessel before the ballast is supplied in connection with placing on the vessel.

22. A method according to claim 19, wherein the wind turbine is in a floating, upright position at the offshore wind farm before the wind turbine is

lowered down to its place of installation.

23. A method according to claim 19, wherein the wind turbine floats in an upright position from the loading space to an unloading position on the vessel.

24. A method according to claims 19, wherein the vessel is loaded with at least three, such as four or five, ready-assembled and function-tested wind turbines.

25. A method of moving a wind turbine from a place of installation on a seabed on an offshore wind farm by means of a vessel, wherein a wind turbine base is connected to at least three horizontally distanced flexible lines from the vessel, wherein ballast means on the vessel are connected to the wind turbine base, wherein lifting by the flexible lines is performed while the wind turbine is standing on the seabed, and wherein ballast is removed from the wind turbine base, the lift in the flexible lines being maintained until at least most of the upper surface of the wind turbine base is located above the sea surface.

26. A method according to claim 25, wherein liquid is pumped down below the wind turbine base in connection with lifting the base off from the seabed.

27. A wind turbine having a wind turbine base and a tower with nacelle and rotor blades mounted on said wind turbine base, wherein the wind turbine base is divided into at least three chambers, at least three of which act as ballast tanks, and wherein the wind turbine base has at least three lifting points with fittings for mounting fastening means.

28. A wind turbine according to claim 27, wherein the wind turbine base has four chambers.

29. A wind turbine according to claim 27, wherein the wind turbine base has a central chamber and four chambers distributed around the central chamber.

30. A wind turbine according to claim 29, wherein the wall of the central chamber extends upwards into a cylindrical pipe connected with the tower of the wind turbine.

31. A wind turbine according to claim 27, wherein the base has a square shape at its lower part and a lifting fitting at each corner.

32. A wind turbine according to claims 27, wherein each ballast tank of the base has a filling pipe and an emptying pipe, the emptying pipe extending down near the bottom of the ballast tank.

33. A wind turbine according to claim 32, wherein each ballast tank has a sounding pipe extending down near the bottom of the ballast tank.

34. A wind turbine according to claim 32, wherein the emptying pipe is provided with an ejector for suction of fluid from the ballast tank when the ejector is supplied with pressurized liquid.

35. A wind turbine according to claims 27, wherein the base has a pipe opening out at the lower side of the base.

36. A wind turbine according to claim 27, wherein pipes for use at filling and emptying of ballast are permanent pipes extending up above a waterline of the base in a self-floating condition of the turbine.

37. A wind turbine according to claim 36, wherein the pipes extend up above the waterline of the wind turbine when the wind turbine is placed on the seabed, and terminate in connecting parts for hose connections.

38. A method of building an offshore wind power farm having an electric grid with cables placed on the sea bottom and a plurality of wind turbines connected to the electric grid for delivering power thereto, wherein the cables in the electric grid are installed on the sea bottom before all wind turbines have been installed, and wherein some of the wind turbines are placed on the farm and connected to the electric grid before all the wind turbines have been placed on the farm.

39. A method according to claim 38, wherein said electric grid is placed on the sea bottom prior to

the placement of the first wind turbine on the farm.

40. A method according to claim 38, wherein a transformer station is connected to the electric grid before all wind turbines have been placed on the farm.

41. A method according to claim 38, wherein one or more of the wind turbines are connected to the electric grid and begin to produce electricity before all wind turbines have been placed on the farm.